

The Relative Value of Sight
and Hearing.
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The Relative Value of Sight and Hearing

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I

THERE have been frequent attempts to demonstrate that deafness is a greater handicap, not to call it an affliction, than blindness and *vice versa*. It is difficult to find a blind person who would prefer to be deaf, and on the other hand the deaf person, meaning one we generally call a "deaf-mute," does not exist who would exchange positions with one who is blind.

All these comparisons and arguments have centered in the disadvantage either deprivation would hold for the individual. So far none has been made as to the importance of either sight or hearing to animal life as a whole. There has been no attempt to submit even an academic argument as to what would be the effect were there, on the one hand, not a single optic nerve in creation, and on the other not a single auditory nerve, with corresponding absence in every form of life of the brain centers governing one or the other.

H. G. Wells, in his fanciful novelette, *The Country of the Blind*, has a well-thought-out sequence of the various phenomena that would accompany total and universal blindness in an entire community. In the case of the full-sensed intruder, Nunez, sight is described as a handicap rendering its possessor a degraded and undesirable addition, to be regarded with contempt, pity and even aversion. The main complaint against Nunez is that he has too much imagination, and his descriptions of the splendors of the outside world are regarded as the vagaries of a madman. When it is discovered that his affliction seems due to his eyes and mobile lids, lacking among the natives, it is proposed to remove his handicap with a surgical operation that, after cutting out the eyeballs, it was hoped would lift him from a grossly inferior plane to the level of the normal citizen.

The domestic life, the limitations imposed by blindness, the various ingenious means and makeshifts to render it a

minimum of a handicap, the living and routine habits rendered not merely convenient but imperative, are interestingly described. The seeing man, Nunez, is at an acute disadvantage in his blind entourage, and so far from being a help, his vision is a detriment. In a country of the blind, not even a full-visioned man, let alone a one-eyed man, can be king.

The story has one weak point. It must inevitably happen that among the fifteen generations of blind people there must be throw-backs or reversions and every generation must have one or more full-sensed men or women. There can be no blind variety of the human race with blindness transmitted unfailingly from one generation to the other, no more than there can be a deaf variety as once set forth in a memorial to Congress by the late Alexander Graham Bell. The *Pisces Bartimeï*, or eyeless fish of the Mammoth Cave, can hardly be cited as evidence; as these creatures live in total and perpetual darkness, their vision, with its organs and nerve, has become gradually until entirely atrophied.

In this connection it may be related that some seventy-five years ago a deaf man by the name of Henry Flournoy proposed a scheme of establishing a colony of deaf-mutes somewhere in Florida, in which the sole medium of communication used in the many social and business affairs of life, domestic and public, should be the sign language, though there was to be instruction in acquiring a command of written English so as to make our literature available, and also to serve, as it does now, for purposes of record, historical, legal and religious. The scheme failed even of actual inception as it was pointed out that the very next generation would consist almost wholly of normally sensed persons. The main opponent of the plan was another brilliant deaf man, Edmund Booth, founder, owner and editor of the *Anamosa*, Iowa, *Eureka*, a coeval, born 1809, and friend of Lincoln.

Wells makes no attempt to follow the devious thread of what might have been had there been total blindness throughout the animal world and had there been not a single optic nerve with its corresponding brain convolutions in the entire plan of creation.

On the supposition of such a condition there would be

no such phenomenon as light as we understand it in all its multifarious manifestations. The radiation of the stars, the silver torch of the moon, the glow of the sun, the radiance of color of the Aurora with its crackling light, the daily matutinal quenching of the starlight would be all non-existent, incomprehensible without the eye and its appurtenances. Solar heat would be a phenomenon incapable of solution. The appearance of fire would reach the mind through no possible avenue, though its scorching and destructive effects would be painfully evident, as in time its beneficent nature would be manifest in colder latitudes, once means had been devised to control its activities. The service it now renders in manufactures and the useful arts would be approached in very small degree.

The thunderclap might be heard but the causative agency, the lightning bolt would remain unknown unless it should smite some nearby object, and thus thunder would become regarded as some terrifyingly destructive agency and very likely as the voice of wrathfully incensed gods.

There would be no celestial firmament, and with it no stars. The flight of meteors would pass unheeded, comets would be unknown with the portents seeing humanity attached to their appearance. There could be no moon, no sun. The whole universe would be circumscribed, compressed, and limitless space would be an impossible conception. Its height would be limited to that of a tall tree that some one more adventurous than the rest might climb, or in a mountain country by perilous ascents often made at the sacrifice of many lives, a trail or path being ultimately made safe and familiar by the toilsome erection of ramparts of stone or ropes of skins and fibre.

Probably a primitive community would have its boundaries designated by the distances at which some great gong or war drum might be heard. In warfare, supposing human nature unhappily to be as it is now, spears, swords and clubs, in the inevitable hand to hand conflict, would be the main weapons, and the artillery would consist of hand-hurled rocks and boulders. In the forest regions and alluvial districts, protective walls and stockades of earth and tree trunks

would be erected and in mountain reaches, passes and approaches would be blocked by ramparts built of huge boulders set in place by many hands and guarded by sentries with supersensitive ears and nostrils.

There would be no conception of color. Vegetable life, would be as gorgeous and many-hued as now, but the most beautiful flower would be the one that best pleased the olfactory, and the rose would still be queen. Animal life would probably take on a drab mouse-gray hue, and among humans the most seductive and melodious voice rather than the human face divine would determine the choice of lovers. Music, vocal and instrumental, would be developed to a higher plane than now, as without painting and its color scheme, and in a large measure, sculpture, to claim their share in artistic activities, music would be the undisputed medium of expression. But for all that there would be no Homers, no Miltons for while these sang for the ear, they painted for the eye with their word pictures. It would be interesting to attempt to conjecture the form, substance and subject of a blind epic for a blind world.

Some blind Cadmus, some genius, would in time stumble on some sort of raised dot-and-dash alphabet such as the Braille or New York Point systems now used in schools for the blind, and thus there would be means of permanent record.

All agencies influencing the olfactory organs would have their place in the scheme of life, as would those influencing the tactile sense. Rain and windstorms might be sensed through these avenues far in advance of their actual coming, but the barometer and the meteorological development we have now would be absent. After many ages electricity would reach a high development after eons of experimentation with sensitive fingers, and telegraphic and telephonic communication and possibly the phonograph and and radio would be evolved, but only after infinitely longer and slower processes than those by which our present equipment was perfected.

But the moving picture would remain forever unknown, as would the telescope and microscope and any of our pres-

ent devices for extending and enlarging the field of vision. With the absence of the microscope bacterial research would be impossible. The various contagious and infective diseases, smallpox, scarlet fever, diphtheria, cholera, and the like, would demand enormous toll, and the Black Death would be a visitant to be dreaded to the end of time. Medical science would be limited and without the aid of the many serums and antitoxins that have deprived so many diseases of their terror.

Surgery would be practised in limited scope and very likely some Ambroise Paré would arise to render his service to humanity. Very likely some blind Lister would lead the way to the use of antiseptics.

The great industrial developments of today would be unthinkable. Practically all means of rapid transit would be absent. There would be no railroads, no automobiles, no bicycles and least of all aeroplanes, nor could there be ocean-going vessels. Even the timid creeping off shore of the mariners of the Odyssey and later the more adventurous galleys of the Phoenicians, would afford too hideous a risk. Only the bravest of the brave with the equilibrating fluid in the semicircular canals of the ear extra-abnormally developed would dare to venture off shore in one of the little coracles of sewn and rib-strung hide affected by the early Britons. Roads and highways as we now have them would be unknown, and no blind person would attempt to span the stupendous breadth of a continent by the means at his disposal. Possibly the gentle burro and horses bred to Shetland pony size would be the fastest means of transportation. The catalogue of domestic animals might include such harmless species as sheep, dwarf cattle, goats, and probably dogs and cats.

It is doubtful, if sight being absent, there would be high flying or swift winged birds, and the phenomenon of migration would lead to interesting conjectures on our part. It is doubtful if such far-flung migrations of any species of bird bereft of sight, would be possible unless abnormally acute hearing, olfactory and tactile nerves should reinforce instinct as the guide. To a sightless world such feathered travelers would become known only in case some specimen

should accidentally fall to earth. The whirr of the wings would be heard and the cause ultimately associated with the specimen captured. Songsters might be heard in the trees, and very likely bird carols would far surpass any that we hear. Even the lark might continue its morning paeon to the sun, guided by the sense of warmth, lacking that of sight. An occasional accidental captive might lead to the bestowal of a distinguishing name.

It should be understood that the foregoing hypothesis is based on the supposition that the entire animal kingdom in the matter of sight was on the same plane with eyeless man. Otherwise the annihilation of the human race by seeing beasts of prey would be inevitable and rapid.

II

Turning to the supposition of universal deafness, to the entire absence of the auditory organs, nerve and cerebral center, were all mankind and every form of animal life deaf, there would be no such phenomenon as sound. Every manifestation of the various influences that impinge on the normal ear would be non-existent.

But there would be one advantage that in a small measure would relieve the infliction of total deafness. The rumble of the thunder accompanying a lightning flash would be felt, as would be the crash of a falling tree or any heavy object. In addition to the shaking of the earth or floor, the atmospheric concussions would affect the body surface, and thus the totally deaf human would feel if not hear the noise. It is a well-known fact that the deaf like to dance and keep perfect time with orchestral music on condition that one of the instruments is a bass viol, whose vibrations are transmitted along the wooden floor to the feet of the dancers. On a concrete floor such well-timed dancing would not be possible.

Without hearing, speech must disappear. Normal man speaks solely and alone because he has ears that hear. And with speech would disappear the printed page in whatever form we know it with its columns and battalions of informa-

tion. But another and fully as adequate a means of intercourse and communication would be evolved in the shape of a highly cultivated sign language. Vis-a-vis conversation would be as easy and rapid as in a hearing world by speech. Forensic eloquence, instead of thundering on the ear as in the ornate phrases of Demosthenes or Daniel Webster, would assail the eye through the poetry of motion in visographic pantomime, that would leave no doubt in the deaf-mute mind, all humanity being covered by this term, and this deaf-mute mind being fully as responsive to the medium adapted to its comprehension as the ear of the blind is to speech.

Here it should be distinctly understood that the "speech and lip-reading" now taught the deaf in the special schools maintained for them is not the speech that the hearing ear comprehends. For those who have never heard or have become deaf so early in life that they have lost all conception of sound, the movements of the lips constitute an intricate, abnormal, unnatural language of signs, each hearing person addressing such a deaf-mute, by reason of varying habits of lip-movement and mouthing, possessing a dialect, as it were, of his own. The majority of the deaf in our special schools who have thus been taught never master this accomplishment. Many never acquire correct English in its written and printed form simply because it is a medium of expression directed at an organ and sense which they do not possess.

In a deaf world Shakespeare would never have existed as we know him. Nor would Goethe, nor Corneille, nor Dante. Their supremely melodious utterances, each in his own vernacular, would convey no sense or inspiration whatever to the deaf *genus homo*. But, instead, there would be pantomimists as on the stage in the time of the Caesars, when pantomime was so highly developed that not only the actors, but the audience, call it vidience, would be enthralled as at an earlier date were the Greek spectators and patrons at the spoken tragedies of Aeschylus, Sophocles and Euripides. Probably there would be such pantomimic classics that

would be recited in the schools as we do selections from our own classics, the deaf-mute textbook being a fixed and ornate pictograph record.

For there would inevitably be a medium of record and printed communication as well as written, evolved, similar but in course of time vastly surpassing the picture writing of the North American Indian in its first crude form, addressing the eye as unmistakably as the printed sentence addresses our ear. Conversation would probably be by the same sign language now used by the American deaf, and this sign language being essentially ideographic would have infinitely less variations than is the case with speech, with its multitude of diverse languages, grammars and dialects. The deaf human from Boston would have no difficulty in carrying on a conversation with a native of Bornea or of Kamtchatka. The universally current sign language used by the several Indian tribes may be taken as proof in point.

Civilization in a deaf world would eventually be the same as it is now. Every form of modern convenience with the exception of the telephone and radio, the phonograph and other contrivances depending on the presence of the sense of hearing would come into existence. Medical and surgical science would be as fully developed. Every form of rapid transit by land, water or air would equal or surpass those that we have now. There would be the same knowledge of the universe with its suns, nebulae and comets. The precision of the seasons, of the solstices and equinoxes, of eclipses, solar and lunar, would be as accurately defined. Astronomy would become a favored science and so would chemistry. Alpha Centauri would be found to be four thousand light-years distant, and the stupendous volume of Betelgeuse would be measured.

Though the semaphore would first be used for long distance communication as in fact it was before the advent of the telegraph, even the telegraph would in time be evolved. By a curious fact Morse tinkered with his telegraph in its first form in the hope of inventing some instrument that would alleviate his wife's deafness, and then again Alexander Graham Bell stumbled on the invention of the telephone in

his efforts to construct some medium that would make two deaf children he was instructing hear.

There would be no Mozarts, no Paganinis, no Verdis, no Jenny Linds, no Schumann-Heinks, no Carusos, no musical or operatic genius, one might add no Beethovens, though Beethoven was deaf, but every branch of art except the one of instrumental and operatic music would flourish. There would be deaf Raphael Sanzios, Michael Angelos, Leonardo da Vincis, Phidias, Praxiteles. There would be deaf Faradays and Davys, Wright brothers, Watts and Stephensons. Some deaf Columbus would in time discover America; some deaf Galileo would fashion his telescope; some Fahrenheit his thermometer.

But art in its various forms would flourish most of all:

Tell me, where is fancy bred;
Or in the heart, or in the head
How begot, how nourished?

Reply, reply!

It is engendered in the eyes,
With gazing fed; and fancy dies
In the cradle where it lies.

With the seeing eye, fancy will always hold sway, the human face divine never cease to have its divinity, and, though *sans* ear and speech, with its eloquent eye, carmine lip and cheek, the lovely hair that is its crown of glory, will ever give inspiration to the artist as well as lover.

The moving picture would become so perfected, as it certainly will under existing conditions, that television would become an accomplished fact and any citizen by merely pressing a button or turning a crank and calling "Central" in signs for such and such a number—for there would be numbers—could see and talk with the desired person in the sign language and rapidly and accurately convey his message or desires.

There would be the same athletic development, the same sports, the same games—hockey, baseball, football, tennis, the same contests, boxing, swimming, rowing, the same horse races, auto, seaplane and aeroplane races; there would be the same track and field sports. All these depend on the eye and the absence of hearing would have a negligible effect

compared with what all these activities are today. There would be Morphys, Anderssens, Laskers and other chess masters.

Warfare would be as it has been and is now. For, reduced to its last analysis, in warfare it is an accurate estimate of distance in its many forms that is the deciding factor—the distance to which a javelin may be thrown or a stone slung, or a catapult hurtle its missile; or the thrust of a sword or spear; or the effective range of a musket or rifle, or shotgun, or of a high-powered rifled gun with a 2,000 pound projectile; or the cruising radius of war vessels of every kind.

It should not be forgotten that though all the foregoing has been based on the hypothesis of a world without light, meaning without sight, on the one hand and without sound, meaning without hearing on the other, the causative influences and agencies of sound and light nevertheless exist. Sound and light are phenomena which, in either instance, the brain fails to perceive for the reason that the proper agencies for their perception and reception, the eye and ear with their nerves, brain centers and external organs are supposed not to exist.

It stands to reason that in the same manner there may be and very likely are manifestations of phenomena and natural forces of which we are unaware because we are not equipped with the necessary media for their perception. There might be some special sense by which such a concept as the fourth dimension, or even the theory of relativity, would be as easily grasped as gravity or our present tri-dimensional restrictions.

But comparing the relative importance of sight and hearing as above set forth, the advantage lies vastly with the former. But nevertheless, in our present everyday life the person bereft of hearing is at a great disadvantage for the reason that the universal medium of communication, speech, is absolutely foreign to the vicarious sense that is forced to serve in place of the ear, the eye, whereas the blind have not the smallest difficulty in mingling with and being of their hearing environment.

This may explain why we have so many more blind men

of note and practically no deaf men in the annals of the race. Homer and Milton, the two greatest epic poets, Belisarius, the Byzantine, John, the blind king of Bohemia, slain at Crecy, are historical figures. In fiction we have the lovely figure of Bulwer-Lytton's Nydia, of Sophocles' Oedipus, led by the sweetest of all old-time daughters, Antigone; the horrid example of Gloucester in *King Lear*, and then again unhappy Prince Arthur, historical and looming large in legend and fiction, nor to forget the pathetic, contrasting figure of poor Lavinia in *Titus Andronicus*.

In a crowd a deaf man passes unnoticed as a unit of the throng, but a blind man becomes conspicuous and seeing none is seen of all. The deaf man is independent in his movements, hampered in his discourse; the blind man must always move with hesitant uncertainty but is free and untrammelled in his utterances. Each has his compensations and each seems happy.

An Adjustment Inventory for Use in Schools for the Deaf

By R. PINTNER, Ph.D., and L. BRUNSCHWIG, Ph.D.
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MODERN educators are recognizing to an increasing extent the new responsibilities which present-day living has conferred upon the school. Training in language, in conventional subject matter, and vocational preparation are being supplemented more and more by an emphasis on other phases of learning, particularly on the development of character and sound mental health.

The scientific spirit in education stimulated the development of objective measures of intelligence and school achievement. The more recent interest in mental hygiene has led to objective tests in the field of personality adjustment. Various types of personality inventories are now available for school children and high school pupils; but the language difficulty of most of these has made their practical use with deaf subjects almost impossible.

DEVELOPMENT OF THE ADJUSTMENT INVENTORY FOR DEAF CHILDREN

The present discussion deals with an adjustment inventory devised specifically for deaf school children. Questions for the test were adapted in part from available tests for hearing children. Suggestions for additional items were gathered from direct observations of deaf children and the types of situations in which they are likely to find themselves. Preliminary forms of the inventory were tried out repeatedly on groups of deaf children and revisions were made to assure not only the validity of items but also their comprehensibility to deaf pupils.

The Adjustment Inventory in its final form follows.

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